IN THE CLAIMS:

Claims 1-47 (canceled)

48. (Previously presented) A method of recovering copper from a copper bearing sulphide mineral slurry which includes the steps of:

(a) subjecting the slurry in a reactor to a bioleaching process at a temperature in excess of 40°C;

(b) supplying a feed gas which contains in excess of 21% oxygen by volume, to said slurry;

(c) controlling dissolved oxygen concentration in said slurry at a level of from 0.2×10^{-3} kg/m^3 to 10×10^{-3} kg/m^3 by controlling at least one of the following: an oxygen content of said feed gas; a feed gas supply rate; a rate of feed of said slurry to said reactor; and

(d) recovering copper from a bioleach residue of the bioleaching process.

49. (Previously presented) The method according to claim 48 further including pre-leaching said slurry prior to said bioleaching process of step (a).

50. (Previously presented) The method according to claim 49 wherein said the pre-leaching is effected using an acidic solution of copper and ferric sulphate.

51. (Previously presented) The method according to claim 48 further including removing ferric arsenate from said bioleach residue before step (d).

52. (Previously presented) The method according to claim 51 further including removing ferric arsenate by precipitation.

53. (Previously presented) The method according to claim 48 further including subjecting said bioleach residue to a neutralisation step which produces carbon dioxide which is fed to said feed gas of step (b) or directly to said slurry.

54. (Previously presented) The method according to claim 48 furthering including recovering copper in step (d) using a solvent extraction and electrowinning process.

55. (Previously presented) The method according to claim 54 further including feeding oxygen generated during the electrowinning process to said feed gas of step (b), or directly to said slurry.

56. (Previously presented) The method according to claim 54 further including supplying raffinate, produced during the solvent extraction, to at least one of the following: said bioleaching process of step (a), and an external heap leach process.

57. (Previously presented) The method according to claim 54 further including feeding oxygen generated during said electrowinning process to said feed gas of step (b) or directly to said slurry.

58. (Previously presented) The method according to claim 48 wherein said slurry contains at least one of the following: arsenical copper sulphides, and copper bearing sulphide minerals refractory to mesophile leaching.

59. (Previously presented) The method according to claim 58 wherein said slurry contain chalcopyrite concentrates.

60. (Previously presented) The method according to claim 48 wherein said feed gas contains in excess of 85% oxygen by volume.

61. (Previously presented) The method according to claim 48 further including controlling a carbon content of said slurry.

62. (Previously presented) The method according to claim 48 further including controlling a carbon dioxide content of said feed gas in a range of from 0.5% to 5.0% by volume.

63. (Previously presented) The method according to claim 48 wherein said bioleaching process is carried out at a temperature in a range of from 40°C to 100°C.

64. (Previously presented) The method according to claim 63 wherein said temperature is in a range of from 60°C to 85°C.

65. (Previously presented) The method according to claim 48 further including bioleaching said slurry at a temperature of up to 45°C using mesophile microorganisms.

66. (Previously presented) The method according to claim 65 wherein said microorganisms are selected from the genus groups comprising *Acidithiobacillus; Thiobacillus; Leptosprillum; Ferromicrobium;* and *Acidiphilium.*

67. (Previously presented) The method according to claim 66 wherein said microorganisms are selected from the group comprising *Acidithiobacillus caldus; Acidithiobacillus thiooxidans; Acidithiobacillus ferrooxidans; Acidithiobacillus acidophilus; Thiobacillus prosperus; Leptospirillum ferrooxidans; Ferromicrobium acidophilus;* and *Acidiphilium cryptum.*

68. (Previously presented) The method according to claim 48 further including bioleaching said slurry at a temperature of from 45°C to 60°C using moderate thermophile microorganisms.

69. (Previously presented) The method according to claim 68 wherein said microorganisms are selected from the genus groups comprising *Acidithiobacillus; Acidimicrobium; Sulfobacillus; Ferroplasma ;* and Alicyclobacillus.

70. (Previously presented) The method according to claim 69 wherein said microorganisms are selected from the group comprising *Acidithiobacillus caldus; Acidimicrobium ferrooxidans; Sulfobacillus acidophilus; Sulfobacillus disulfidooxidans; Sulfobacillus thermosulfidooxidans; Ferroplasma acidarmanus; Thermoplasma acidophilum;* and *Alicyclobacillus acidocaldrius.*

71. (Previously presented) The method according to claim 64 further including bioleaching said slurry at a temperature of from 60°C to 85°C using thermophilic microorganisms.

72. (Previously presented) The method according to claim 71 wherein said microorganisms are selected from the genus groups comprising *Acidothermus; Sulfolobus; Metallosphaera; Acidianus; Ferroplasma; Thermoplasma;* and *Picrophilus.*

73. (Previously presented) The method according to claim 72 wherein said microorganisms are selected from the group comprising *Sulfolobus metallicus; Sulfolobus acidocaldarius; Sulfolobus thermosulfidooxidans; Acidianus infernus; Metallosphaera sedula; Ferroplasma acidarmanus; Thermoplasma acidophilum; Thermoplasma volcanium;* and Picrophilus oshimae.

74. (Previously presented) A plant for recovering copper from a copper bearing sulphide mineral slurry which includes a reactor vessel, a source which feeds a copper bearing sulphide mineral slurry to said vessel wherein a bioleaching process is carried out at a temperature in excess of 40°C, an oxygen source which supplies oxygen in a form of oxygen enriched gas or substantially pure oxygen to said slurry, a device which measures a dissolved oxygen concentration in said slurry

in said vessel, a control mechanism whereby, in response to said measured dissolved oxygen concentration, the supply of oxygen from said oxygen source to said slurry is controlled to achieve a dissolved oxygen concentration in said slurry of from 0.2×10^{-3} kg/m^3 to 10×10^{-3} kg/m^3, and a recovery system which recovers copper from a bioleach residue from said reactor vessel.

75. (Canceled)

76. (Currently amended) The plant according to claim ~~75~~ <u>74</u> further including a pre-leaching stage for leaching said copper bearing sulphide mineral slurry before said slurry is fed to said reactor vessel.